

Application No. 09/496,061
Response to Office Action

Customer No. 01933

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE PRIOR ART REJECTION

Claims 46-51 were rejected under 35 USC 103 as being obvious in view of the combination of USP 4,875,091 (newly cited "Yamada et al") and USP 4,924,856 (previously cited "Noguchi"). This rejection, however, is respectfully traversed.

According to the present invention as recited in independent claim 46, corresponding independent method claim 51, and independent claim 50, an endoscope image sensing apparatus is provided which comprises: an image sensing device for imaging an object to obtain an image signal, and outputting the image signal; a storage section for storing a plurality of color matrices each corresponding to a plurality of color tones for displaying an observation image of the object on a display section; a selecting section for selecting a color matrix from the plurality of color matrices for displaying the observation image in a color tone desired by an observer; and a computing section for performing computation using the selected color matrix to convert the image signal output from the image sensing device to a color component signal.

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On page 3 of the Office Action, the Examiner asserts that the selection section of the claimed present invention corresponds to the control circuit 13 of Yamada et al.

It is respectfully submitted, however, that Yamada et al discloses a matrix circuit in which the color mixture caused by the read-out timing of sequential color image fields is corrected using weighting coefficients. And it is respectfully submitted that Yamada et al does not disclose, teach or suggest selecting a color matrix from the plurality of color matrices for displaying the observation image in a color tone desired by an observer, in the manner of the claimed present invention.

As shown in Figs. 3A and 3B of Yamada et al, for example, picture elements a, b and c on the solid state imaging device are exposed to illumination light during respective periods t_a , t_b and t_c when the field F_b is scanned. Therefore, while field F_b is being scanned the light received by picture element a is mostly red, the light received by picture element b is about half red and half green, and the light received by picture element c is mostly green.

Thus, as explained by Yamada et al, the color mixture at each picture element is dependent upon "S," which is the ratio of a time t after the field started to a total time of the field. To obtain primary color signals having no mixture, Yamada et al explains that equations (2) must be solved based on the output of

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each field. In order to simplify the solving of the equations (2) according to Yamada et al, "S" is expressed as n/m , in which n is an integer and m is the total number of picture elements in a field or the total number of horizontal lines.

The control circuit 13 of Yamada et al, which the Examiner asserts corresponds to the selection circuit of the claimed present invention, outputs values for "n" so that the calculations expressed by equations (2) may be performed so that primary color signals with no color signal may be outputted. That is, the control circuit 13 of Yamada et al outputs values used to perform weighting to account for the readout timings of the image signals so as to produced unmixed primary color signals. And it is respectfully submitted that outputting values in accordance with read-out timings to allow the calculation of primary color signals with no mixing does not at all correspond to selecting one of a plurality of color matrices to produce a desired color tone.

It is respectfully submitted, therefore, that the control circuit 13 of Yamada et al does not at all correspond to the selection section of the claimed present invention which is provided for selecting a color matrix from the plurality of selectable color matrices so as to display an observation image in a color tone desired by an observer.

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Indeed, the Examiner acknowledges on page 3 of the Office Action that Yamada et al does not disclose selecting a color matrix to display an observation image in a color tone desired by an observer. The Examiner contends, however, that it would have been obvious to allow an observer to select a desired color matrix in the control circuit of Yamada et al in view of Noguchi.

As explained in the Amendment filed on November 9, 2004, however, Noguchi is directed to an endoscope light source apparatus which allows different types of illumination (i.e. field sequential or white color light) to be switched based on whether the scope is a type which uses a video processor or a camera control unit to process the image signal. And according to Noguchi et al, the amount of light emitted by the light source may be controlled in response to the type of illumination.

However, it is respectfully submitted that Noguchi merely discloses switching the type of illumination light, and it is respectfully submitted that Noguchi does not at all disclose, teach or suggest the feature of the claimed present invention whereby the matrix used for processing the image signal to display the observation image of the object in a color tone desired by the user is converted to a matrix corresponding to the color tone of the observation image to be displayed.

Indeed, it is respectfully pointed out that the panel 502 of Noguchi identified by the Examiner on page 3 of the Office Action

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are provided for making display inputs and switch inputs, so as to, for example, control the switching switch 48 and the filter moving means 45 to move RGB rotary filter 43.

As explained in detail hereinabove, it is respectfully submitted that Yamada et al merely discloses a control circuit for performing weighting based on read-out timings to produce unmixed primary color signals, and it is respectfully submitted that Noguchi merely discloses switching a type of illumination and controlling a light amount based on the type of illumination.

In addition, as explained in detail hereinabove, it is respectfully submitted that Yamada et al and Noguchi do not disclose, teach or suggest storing a plurality of color matrices each corresponding to a plurality of color tones for displaying an observation image of the object on a display section, and selecting a color matrix from the plurality of color matrices for displaying the observation image in a color tone desired by an observer, in the manner of the claimed present invention.

Accordingly, it is respectfully submitted that independent claims 46, 50 and 51, and claims 47-49 depending from claim 46, clearly patentably distinguish over Yamada et al and Noguchi under 35 USC 103.

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In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

/Douglas Holtz/

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